Alan A. Lucier, Ph.D.
Senior Vice President
NCASI
P.O. Box 13318
RTP, NC 27709-3318
(919) 558-1993

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TO: John Cordts

FROM: Al Lucier

SUBJECT: Possible Data Requirements for Environmental Assessment of Transgenic Trees

Forest biotechnology has great potential to yield significant economic and ecological benefits. Realizing these potential benefits in the United States will require a well-coordinated national effort. Federal agencies have critical roles in regulation, research, and other aspects of forest biotechnology. Thoughtful early attention by APHIS and other agencies to data requirements for environmental assessments of transgenic trees is appropriate and welcome.

Appropriate regulation of transgenic trees is critical to the success of forest biotechnology in the United States. Excessive regulation of forest biotechnology could impose cost burdens that substantially delay and reduce the benefits actually realized. Insufficient regulation is equally undesirable to the extent it weakens public support for forest biotechnology and fails to prevent undesirable environmental consequences.

APHIS and other federal agencies will have limited resources to support regulatory programs for transgenic trees. To achieve efficient and effective regulation, environmental assessments must focus on important issues. There is an urgent need for substantial public investment in research to support development of realistic and well-tested models of environmental risk that can be used in setting regulatory priorities and assessing specific applications of transgenes in tree species. In some cases, agricultural systems in which transgenes have already been widely deployed can serve as real-world platforms for model testing.

The materials distributed at the workshop in July suggest that data requirements for transgenic trees might be modeled on data requirements already established for transgenic crops. This is a reasonable starting point given the excellent environmental record of crop biotechnology. Nevertheless, it is important to scrutinize each crop data requirement to determine whether it is suitable for use with tree species. For example, it is a fairly simple matter to measure seed yield per plant in soybean, but a much more difficult and expensive task in tree species. Most trees do not

begin to flower until they are several years old, and may not reach peak seed production for many years thereafter. Moreover, environmental conditions during flower production, pollination, and seed development can have major effects on tree seed production. Seed production per plant should not be a data requirement for transgenic trees. Practical alternative measures of 'invasiveness' need to be developed for tree species.

In trees, deployment of a gene construct in a single species will likely require transformation of many clones. Research is needed to determine whether or not there are likely to be significant clonal differences in ecological risks associated with a single gene construct. There may be opportunities to streamline the regulatory process if risks associated with single gene constructs are similar across clones.

Thank you for the opportunity to comment on these important issues.

Very truly yours,

Alan A. Lucier, Ph.D.